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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,205	02/03/2006	Marc Joseph Rita Op De Beeck	NL030933	9593
24737 7590 05/15/2009 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510				
EXAMINER RAHMJOO, MANUCHER				
ART UNIT 2624		PAPER NUMBER		
MAIL DATE 05/15/2009		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/567,205

Applicant(s)

OP DE BEECK ET AL.

Examiner

MIKE RAHMJOO

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 8-11 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4 and 8-11 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 03 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SI-108)
Paper No(s)/Mail Date 2/3/06, 8/30/07
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112 first and second paragraphs as attempting to define a product (i.e., machine or apparatus) entirely by virtue of its function, in the absence of any recited structure.

Products (i.e., a computer program product) must distinguish over the prior art in terms of their structure (or structure + structure's function when claimed functionally) rather than function alone (MPEP 2114). Therefore, an "apparatus" not having structural limitations fails to "particularly point out and distinctly claim ..." the invention in accordance with 35 U.S.C. 112, 2nd paragraph.

Furthermore, while the specification disclosure may be enabling for a plurality of structural elements performing the claimed functions [1], the specification does not reasonably provide enablement for a single structural element (or no structural elements for the claimed "processing means" in the preamble) performing all of the claimed functions. That is, given the claim in question, the specification does not enable any

person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims ("A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph" because a single means claim covers "every conceivable means for achieving the stated purpose" and "the specification disclosed at most only those means known to the inventor" - *MPEP*, at *paragraph 2164.08(a)*).

Applicant is advised to define the apparatus by virtue of the individual structural element that serve to perform the individual functions recited in the corresponding method claim.

[1] Even when an apparatus is disclosed as being computer implemented (e.g., software implemented on hardware), the requirement remains that there be some structure recited in the body of the claim (e.g., a processor and a memory storing a program which when implemented performs the method steps). For purposes of "means plus function" language, individual disclosed steps corresponding to computer program elements operating on a processor (e.g., inputting, filtering, detecting and resolving) may be considered as separate means (*Dossel*, 115 F.3d at 946-47, 42 USPQ2d at 1885).

Claims 2 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant recites "edge detection means (102) are arranged..." in claim 2. It is therefore unclear how a single means (102), as recited in claim 1 (i.e., edge detection means (102) are arranged), is arranged respectively.

As per claim 11, lines 1- 4 applicant recites "A computer program product to be loaded by a computer arrangement, comprising instructions to generate a multi-view image on basis of an input image, the computer arrangement comprising processing means and a memory, the computer program product, after being loaded, providing said processing means with the capability to carry out". As apparent from the underlined portion of the claim, the step or acts are not definite and therefore fail to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 11 defines a computer program product embodying functional descriptive material (i.e., comprising instructions). However, the claim does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it

becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

"A transitory, propagating signal ... is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (In re Nuijten, 84 USPQ2d 1495 (Fed. Cir. 2007)). Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. Should the applicant's specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium",

the examiner suggests amending the claim to include the disclosed tangible computer readable storage media, while at the same time excluding the intangible transitory media such as signals, carrier waves, etc.

Merely reciting functional descriptive material as residing on a tangible medium is not sufficient. If the scope of the claimed medium covers media other than "computer readable" media (e.g., "a tangible media", a "machine-readable media", etc.), the claim remains non-statutory. The full scope of the claimed media (regardless of what words applicant chooses) should not fall outside that of a computer readable medium.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujimura et al (US PAP 2005/ 0031166).

As per claims 1, 10 and 11, Fujimura et al teaches edge detection means (i.e., tracking system 200) for detecting an edge in the input image (i.e., map 300 with target 206 and edge 301 and 302) see fig. 3 and [30];

depth map generation means (i.e., tracking system 200) for generating a depth map for the input image on basis of the edge, a first group of elements of the depth map corresponding to the edge having a first depth value, related to a viewer of the multi-view image (i.e., hands of the diver at the steering with D_{min} or head of the driver at the headrest with D_{max} of fig. 1A), and a second group of elements of the depth map corresponding to a region of the input image, being located adjacent to the edge, having a second depth value, related to the viewer of the multi-view image (i.e., the areas adjacent to said edges in fig.1A), the first value being less than the second value (i.e., the difference of depth between said elements denoted with D_{min} and D_{max} . Fujimura et al teaches target 206 associated with edge and depth information which is shown with transformation/ depth map where points out side the targets edge have values and depth information relative to the targets edge as an indication of the distance of the targets edge 301 having a reference values "0" see fig. 3 and [32]; and rendering means (i.e., tracking system 200) for rendering the multi-view image on basis of the input image and the depth map (i.e., output of the tracking data) see fig. 6-8.

Claims 1-4 and 8- 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Neumann et al (US PAP 2004/ 0105573), hereinafter, Neumann.

As per claims 1, 10 and 11, Neumann teaches edge detection means (i.e., means 110,120 and 130 of system 100 of fig. 1) for detecting an edge in the input

image(i.e., detection of the roof/ and building edges made possible via system 100) see [45] ;

depth map generation means (i.e., means 160 and 170 of system 100 of fig.1) for generating a depth map for the input image on basis of the edge, a first group of elements of the depth map corresponding to the edge having a first depth value, related to a viewer of the multi-view image (i.e., detection of the roof/ and building edges along with associated depth discontinuities of the edges made possible via system 100 in [44- 45]), and a second group of elements of the depth map corresponding to a region of the input image, being located adjacent to the edge, having a second depth value (i.e., depth surface defined along with two reference points used for edge detection in [44- 45]), related to the viewer of the multi-view image, the first value being less than the second value (i.e., each of the primitives, according to equation 2 having x, y values, which are used to calculate the z values of said primitives; the z values thus calculated of each of the primitives being different when viewed from view points when image points/ primitives are mapped and a 3D model is thus refined see fig. 5 and [62]); and

rendering means (i.e., means 190 of system 100 of fig. 1) for rendering the multi-view image on basis of the input image and the depth map see fig. 5- 6.

As per [45-46], Neumann teaches "first, the geometry connectivity information of a Delaunay reconstruction can be used to track the connected edge points. Those edges that lie along the Delaunay triangulation can be accepted as the possible edge points. Second, a depth filter can be used to constrain the detected edges (edges

reconstructed and detected, respectively). The depth filter can be applied to all the possible edge points, and those points having similar depth values as that of the defined reference points can pass as correct edge points. Once the roof borders have been extracted, they can be parameterized using least-square fitting, and then the roof corners can be refined again based on the fitted roof borders (depth map generation of possible edge points)".

As per claim 2, Neumann implicitly teaches the edge detection means are arranged to detect the edge by computing pixel value differences between first pixel values of the input image and respective second pixel values of a second input image, the input image and the second input image belonging to a sequence of video images (i.e., multiple streams of data showing a rendered view from a viewpoint made possible via pixel value differences) see [92] and [101].

As per claim 3, Neumann teaches the first pixel values represent one of color and luminance (i.e., occluded portions broadly corresponding to the portions of the image inside an boundary/ or an edge with computed depth map) see.[0088]

As per claim 4, Neumann teaches the first depth value is a function of a first one of the pixel value differences (i.e., refinement of the 2D image to obtain a 3D image in the abstract; [34] teaches use of Delaunay triangulation, to preserve the topology and connectivity information of the *original data* (i.e., as a function of the original data which includes depth information) than other techniques in this context. The hole-filling operation can be performed by directly interpolating the *depth values in the range* image in order to preserve the geometric topology of the model).

As per claim 8, Neumann teaches receiving means (602) for receiving a signal corresponding to an input image(i.e., fig. 1 and elements 140- 170); and

a multi-view image generation unit (604) for generating a multi-view image on basis of the input image(i.e., fig. 1, visualization sub- system 190). Figure 2 also teaches receiving means (stereo camera 210 , GNSS receiver 230 and or 3D internal sensor 240) and a multi- view generation means (portable data processing system 220) se fig. 2.

As per claim 9, Neumann teaches a multi-view display device (606) for displaying the multi-view image (i.e., display/ and screen) see [89].

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Rahmjoo whose telephone number is 571-272-7789. The examiner can normally be reached on 8 AM- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Rahmjoo

May 10, 2009

/Matthew C Bella/

Supervisory Patent Examiner, Art Unit 2624